

## **REMARKS**

Claims 4, 6, 8, 10, 12, 14-17, 24, and 35-40 are now pending in the application. Claims 4, 8, 12, 14, and 16 are currently amended. By this amendment, no claims are newly added or cancelled. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

## **REJECTIONS UNDER 35 U.S.C. § 102 AND § 103**

Claim 4 stands rejected under 35 U.S.C. §102(e) as being anticipated by Chang (U.S. Pat. Pub. No. 2004/0208587 A1; "Chang"). Claims 6, 8, 10, and 12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Chang. These rejections are respectfully traversed.

## **Support in Specification**

Claim 4 has been amended based on, for example, page 6, third paragraph, of the specification.

Claim 8 has been amended based on, for example, page 7, third paragraph, of the specification.

Claim 12 has been amended based on, for example, page 123, second paragraph, and page 124, penultimate paragraph, of the specification.

Claim 14 has been amended based on, for example, page 114, last paragraph, and page 115, third paragraph, of the specification.

Claim 16 has been amended based on, for example, page 123, second paragraph, and page 124, penultimate paragraph, of the specification.

## **Arguments**

The following are Applicant's arguments based on independent Claims 4, 6, 8, 10, 12, 14, and 16. Dependent Claims 15 and 17 should also be patentable over Chang at least by virtue of their dependency on independent Claims 14 and 16.

### **Claim 4**

In accordance with Claim 4, it is possible to decide which optical node device implements 3R relay in both the upstream and downstream directions at the time that a bi-directional path setting is signaled. Therefore, optical signals can be transmitted immediately after signaling completion, and thus it is possible to set optical paths promptly.

In order that such an advantageous effect can be more clearly read on Claim 4, Claim 4 has been amended so that which optical node device implements 3R relay in both the downstream optical path and the upstream optical path is decided at the time that a bi-directional path setting is signaled.

Although the Examiner provides assertions as recited on page 2, second paragraph, last three lines, of the Advisory Action, Chang fails to disclose or suggest the foregoing added limitation, and thus the foregoing advantageous effect of Claim 4 cannot be obtained from Chang.

## **Claim 6**

In Claim 6, if the number of 3R implementations when one optical node device functions as a 3R source node is less than the number of 3R implementations if the one optical node device does not function as a 3R source node, it is determined that the one optical node device implements 3R relay.

The Examiner asserts that "where the signal [re]generation is performed is nothing more than a design choice" (page 2, fourth paragraph, last line, of the Advisory Action).

Applicant respectfully disagrees. With the foregoing distinctive structure of Claim 6, it is possible to transmit an optical signal by the minimum number of 3R relay operations, and thus network resources can be effectively used with the minimum number of, or minimum capability of, 3R repeaters necessary, thereby making it possible to configure economical optical networks. As explained on page 2, last paragraph, of the specification of the present application, since 3R repeaters are expensive, by employing the structure as recited in Claim 6, it is possible to avoid the use of such 3R repeaters as much as possible, and thus optical networks can be realized extremely economically.

## **Claim 8**

In accordance with Claim 8, even if one optical node device does not store 3R section information ahead of the one optical node device itself, it is possible to realize 3R relay transmission without delay.

In order that such an advantageous effect can be more clearly read on Claim 8, Claim 8 has been amended so as to recite that 3R section information relating to only nodes from a source node to one optical node device is stored. In Chang, every node stores information relating to all the photonic cells, or one centralized location stores such information relating to all the photonic cells. Chang fails to disclose or suggest that each node stores only a part of all the pieces of 3R section information. Therefore, Chang neither discloses nor suggests the added limitation, and thus the foregoing advantageous effect of Claim 8 cannot be obtained from Chang.

In FIG. 6 of Chang, it is determined that OEO is necessary at node n if node p does not belong to the same photonic cell to which node m belongs. Therefore, node n of Chang may be interpreted as a 3R destination node. However, FIG. 6 of Chang merely describes that OEO is performed at node n. Therefore, node p is not necessarily a 3R destination node of a 3R section between node n, which also serves as a 3R source node, and node p. Specifically, an optical signal from node n may reach a further node than node p (i.e., a node that is closer to a destination node than node p) without performing OEO. Therefore, Chang does not disclose or suggest the technical idea of Claim 8 of deciding that one optical node device implements 3R relay by using the one optical node device as a 3R source node and the next hop optical node device as a 3R destination node. This argument can also apply to FIG. 7 of Chang.

## **Claim 10**

As explained above with respect to Claim 8, node n shown in FIG. 6 of Chang, which performs OEO, may be interpreted as a 3R destination node. However, if so, it is

impossible to say that node n "does not belong to any one of 3R sections having a 3R source node on an optical path that passes through the one optical node device" as recited in the penultimate paragraph of Claim 10 (see also an optical node device 5 shown in FIG. 5 of the present application). This argument can also apply to FIG. 7 of Chang.

Moreover, as explained with respect to Claim 8, FIG. 6 and FIG. 7 of Chang do not disclose or suggest that "a unit which decides that the one optical node device is an optical node device that implements 3R relay by using the one optical node device as a 3R source node, and a next hop optical node device of the one optical node device as a 3R destination node" as recited in the last paragraph of Claim 10.

## **Claim 12**

In Claim 12, when one optical node device is a 3R source node in an upstream optical path and is not a destination node and a 3R destination node in the upstream optical path, a message is transmitted so as to transmit to a previous hop optical node device in the upstream optical path information that the previous hop optical node device is a 3R source node which uses the one optical node device as a 3R destination node. In addition, when the optical node device itself receives the message in the upstream optical path, the optical node device decides that the optical node device itself is a 3R source node in the upstream optical path with an optical node device which has sent the message as a 3R destination node.

In other words, if a 3R section is not set between a 3R source node and its previous hop node (i.e., in the case of an upstream optical path, a node which is

immediately before (that is, closer to a destination node) this 3R source node), the 3R source node determines that the previous hop node is a new 3R source node and the 3R source node itself is a new 3R destination node (i.e., establishes a new 3R section).

As mentioned above, node n shown in FIG. 6 of Chang may be interpreted as a 3R destination node. However, if so, node n does not correspond to the claimed limitation of "when the one optical node device is a 3R source node in an upstream optical path, and is not a destination node, and the one optical node device is not a 3R destination node in the upstream optical path" (see penultimate paragraph of Claim 12). Moreover, even if node m is assumed to be a 3R source node, FIG. 6 of Chang does not mention the previous hop node of node m (in the case of a downstream optical path, a node which is immediately before (that is, closer to a source node) node m). Furthermore, FIG. 7 of Chang illustrates no upstream routes as pointed out in the response to the previous Office Action. Even referring to downstream routes in Chang, node 1 is the only node that is a 3R source node, but is not a destination node, and is not a 3R destination node. However, with respect to node 1, there is no previous hop node.

In accordance with Claim 12, 3R section information for all of the sections of an optical network does not need to be stored, and 3R section information must only be stored for key places, and thus it is possible to store 3R section information efficiently.

In order that such an advantageous effect can be more clearly read on Claim 12, Claim 12 has been amended so as to recite that only 3R section information in which one optical node device is a 3R source node or a 3R destination node is stored. This

added limitation is neither disclosed nor suggested in Chang, and thus the foregoing advantageous effect of Claim 12 cannot be obtained from Chang.

#### **Claim 14**

In accordance with Claim 14, it is not necessary to store 3R section information that is not related to the optical node device itself, and thus it is possible to use information storage resources effectively.

In order that such an advantageous effect can be more clearly read on Claim 14, Claim 14 has been amended so as to recite that only 3R section information in which the optical node device itself is a 3R source node is stored. This added limitation is neither disclosed nor suggested in Chang, and thus the foregoing advantageous effect of Claim 14 cannot be obtained from Chang.

#### **Claim 16**

In accordance with Claim 16, it is not necessary to store 3R section information which is not related to the optical node device itself, and thus it is possible to determine an optical node device that implements 3R relay in a bi-directional optical path while using information storage resources effectively.

In order that such an advantageous effect can be more clearly read on Claim 16, Claim 16 has been amended so as to recite that only 3R section information in which the optical node device itself is a 3R source node or a 3R destination node is stored. This added limitation is neither disclosed nor suggested in Chang, and thus the foregoing advantageous effect of Claim 16 cannot be obtained from Chang.

## **CONCLUSION**

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested.

If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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